

AMENDED CLAIMS

1. A transistor

- with an emitter (1), a collector (2) and a base layer (3),
- wherein the emitter (1) extends into the base layer (3),
- wherein the base layer (3) has an intrinsic zone (4) arranged between emitter (1) and collector (2) and an extrinsic zone (6) running between the intrinsic zone (4) and a base contact (5),
- wherein the base layer (3) contains a first doping layer (7) doped with a trivalent doping agent, which doping layer extends into the extrinsic zone (6) and which, in the area of the emitter (1), is contra-doped with a pentavalent contra-doping (8),
- wherein carbon atoms with a concentration  $> 1 \times 10^{18} \text{ cm}^{-3}$  are incorporated in the base layer.

2. The transistor according to claim 1,  
wherein the trivalent doping agent is boron.

3. The transistor according to any one of the preceding claims,

- wherein two further doping layers (9, 10) doped with a trivalent doping agent are arranged between the first doping layer (7) and the collector (2),

- and wherein the doping-agent concentration (C2) of the second doping layer (9) arranged between the first doping layer (7) and the third doping layer (10) is smaller than the doping-agent concentration (C1) of the first doping layer (7) and smaller than the doping-agent concentration (C3) of the third doping layer (10).
4. The transistor according to any one of the preceding claims,
- wherein the first doping layer (7) has a fraction of at least 30% of the total amount of doping agent of the base layer (3).
5. The transistor according to any one of the preceding claims, wherein the contra-doping (8) is diffused into the base layer (3) from an emitter area (11) adjacent to the base layer (3).